



## CONSUMER PRODUCT SAFETY COMMISSION

### 16 CFR Chapter II

[Docket No. CPSC-2021-0014]

#### Off-Highway Vehicle (OHV) Fire and Debris-Penetration Hazards; Advance Notice of Proposed Rulemaking; Request for Comments and Information

**AGENCY:** Consumer Product Safety Commission.

**ACTION:** Advance notice of proposed rulemaking.

**SUMMARY:** The Consumer Product Safety Commission (CPSC or Commission) is considering developing a rule to address the risk of injury associated with fire and debris-penetration hazards associated with off-highway vehicles (OHVs). This advance notice of proposed rulemaking (ANPR) initiates a rulemaking proceeding under the Consumer Product Safety Act (CPSA). We invite written comments from interested persons concerning the risk of injury associated with OHV fire and debris-penetration hazards, the regulatory alternatives discussed in this notice, other possible means to address this risk, and the economic impacts of the various alternatives. We also invite interested persons to submit an existing standard, or a statement of intent to modify or develop a voluntary standard, to address the risks of injury described in this ANPR.

**DATES:** Written comments and submissions in response to this notice must be received by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

**ADDRESSES:** You may submit comments, identified by Docket No. CPSC-2021-0014, by any of the following methods:

*Electronic Submissions:* Submit electronic comments to the Federal eRulemaking Portal at: [www.regulations.gov](https://www.regulations.gov). Follow the instructions for submitting comments. The

Commission encourages you to submit electronic comments by using the Federal eRulemaking Portal, as described above.

*Written Submissions:* Submit written submissions by mail/hand delivery/courier to: Division of the Secretariat, Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814; telephone: (301) 504-7923. Alternatively, as a temporary option during the COVID-19 pandemic, you can email such submissions to: [cpsc-os@cpsc.gov](mailto:cpsc-os@cpsc.gov).

*Instructions:* All submissions received must include the agency name and docket number for this document. All comments received may be posted without change, including any personal identifiers, contact information, or other personal information provided, to [www.regulations.gov](http://www.regulations.gov). Do not submit confidential business information, trade secret information, or other sensitive or protected information that you do not want to be available to the public. If furnished at all, such information should be submitted in writing.

*Docket:* For access to the docket to read background documents or comments received, go to [www.regulations.gov](http://www.regulations.gov), and insert the docket number CPSC-2021-0014 into the “Search” box, and follow the prompts.

**FOR FURTHER INFORMATION CONTACT:** Han Lim, Directorate for Engineering Sciences, U.S. Consumer Product Safety Commission, 5 Research Place, Rockville, MD 20850; telephone: (301) 987-2327; e-mail: [hlim@cpsc.gov](mailto:hlim@cpsc.gov).

## **SUPPLEMENTARY INFORMATION:**

### **A. Background**

The CPSC is aware of numerous injuries and deaths resulting from fire hazards associated with all-terrain vehicles (ATVs), recreational off-highway Vehicles (ROVs), and Utility Terrain or Utility Task Vehicles (UTVs), and from debris-penetration hazards

associated with ROVs and UTVs. For the purposes of this rulemaking proceeding, we collectively refer to these three vehicle types as off-highway vehicles, or OHVs.

CPSC staff's review of incident data from January 1, 2003 through December 31, 2020 in CPSC's Consumer Product Safety Risk Management System (CPSRMS) identified 28 fatalities and 264 injuries from fire-related OHV hazards, and 6 fatalities and 20 injuries<sup>1</sup> from debris-penetration OHV hazards. From the National Electronic Injury Surveillance System (NEISS) database, CPSC staff estimates there were 14,200 emergency department-treated injuries from 2007 to 2019 (based on a sample size of 282) associated with OHV fire, thermal, and burn hazards without indication of a crash or related event.

The current voluntary standards for the three OHV types are:

- ANSI/SVIA 1-2017 *Four-Wheel All-Terrain Vehicles – Equipment, Configurations, and Performance Requirements* developed by Specialty Vehicle Institute of America (SVIA) for ATVs and incorporated by reference as a mandatory standard in 16 CFR 1420.3;
- ANSI/ROHVA 1-2016 *Recreational Off-Highway Vehicles*; and
- ANSI/OPEI B71.9-2016—*American National Standard for Multipurpose Off-Highway Utility Vehicles*.

The current voluntary standards for ROVs and UTVs, ANSI/ROHVA-1-2016 and ANSI/OPEI B71.9-2016, respectively, do not have requirements that address fire hazards or debris-penetration hazards. The current voluntary standard for ATVs, ANSI/SVIA 1-2017, does not include requirements that address fire hazards.

CPSC staff has met with representatives from ROHVA, SVIA, and OPEI on multiple occasions, beginning in September 2018, to discuss the development of requirements to address the risk of fire and debris-penetration hazards. CPSC staff

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<sup>1</sup> Note that two of the 20 injuries related to OHV debris-penetration hazards came from the NEISS data.

believes that significant progress has been made in discussing possible fire preventative standard requirements, but to date the standard development organizations have not proposed any fire preventative standard requirements. In addition, there has been no discussion on possible debris-penetration mitigation standard requirements.

The Commission is considering developing a mandatory standard (or standards) to reduce the risk of injury associated with OHV fire and debris-penetration hazards. Commission staff prepared a briefing package to describe the products at issue, assess the relevant incident data, describe the hazards, examine relevant voluntary standards, and discuss regulatory alternatives for addressing the risk associated with OHV fire and debris-penetration hazards. That briefing package is available at:

<https://www.cpsc.gov/s3fs-public/Advance-Notice-of-Proposed-Rulemaking-Regarding-Off-Highway-Vehicles.pdf>.

## **B. Statutory Authority**

A rulemaking addressing the fire and debris-penetration hazards associated with ROVs and UTVs falls under the authority of the CPSA. 15 U.S.C. 2051–2084. A rulemaking addressing the fire hazards associated with ATVs is subject to section 42(b)(3) of the CPSA. Section 42(b)(3) provides that for CPSC-initiated changes to the mandatory standard for ATVs, 15 U.S.C. 2089, the Commission must make findings required by sections 7 and 9 of the CPSA, 15 U.S.C. 2056 and 2058. Thus, a Commission-initiated rulemaking addressing the fire hazards associated with ATVs would also fall under sections 7 and 9 of the CPSA. Because of the three vehicle types and two different hazard patterns involved in this rulemaking, it is possible the Commission will divide this rulemaking into separate rulemakings at the notice of proposed rulemaking (NPR) stage.

Under section 7 of the CPSA, the Commission may issue a consumer product safety standard if the requirements of the standard are “reasonably necessary to prevent

or reduce an unreasonable risk of injury associated with [a] product.” 15 U.S.C. 2056(a). The safety standard may consist of performance requirements or requirements for warnings and instructions. *Id.* However, if there is a voluntary standard that would adequately reduce the risk of injury the Commission seeks to address, and there is likely to be substantial compliance with that standard, then the Commission must rely on the voluntary standard, instead of issuing a mandatory standard. 15 U.S.C. 2056(b)(1). To issue a mandatory standard under section 7, the Commission must follow the procedural and substantive requirements in section 9 of the CPSA. 15 U.S.C. 2056(a).

Under section 9 of the CPSA, the Commission may begin rulemaking by issuing an ANPR. 15 U.S.C. 2058(a). The ANPR must identify the product and the nature of the risk of injury associated with it; summarize the regulatory alternatives the Commission is considering; and include information about any relevant existing standards, and why the Commission preliminarily believes those standards would not adequately reduce the risk of injury associated with the product. The ANPR must also invite comments concerning the risk of injury and regulatory or other possible alternatives for addressing the risk, and invite the public to submit existing standards or a statement of intent to modify or develop a voluntary standard to address the risk of injury. *Id.*

After publishing an ANPR, the Commission may proceed with rulemaking by reviewing the comments received in response to the ANPR and publishing an NPR. An NPR must include the text of the proposed rule, alternatives the Commission is considering, a preliminary regulatory analysis describing the costs and benefits of the proposed rule and the alternatives, and an assessment of any submitted standards. 15 U.S.C. 2058(c). The Commission would then review comments on the NPR and decide whether to issue a final rule, along with a final regulatory analysis.

### **C. The Product**

For purposes of this rulemaking, OHVs include: ATVs, ROVs, and UTVs. The scope of this rulemaking does not include golf cars, personal transport vehicles (PTVs), low-speed vehicles, or dune buggies.

#### 1. All-Terrain Vehicles

An all-terrain vehicle (ATV) is a motorized vehicle with three or four broad, low-pressure tires (less than 10 pounds per square inch), a seat designed to be straddled by the operator, handlebars for steering, and designed for off-highway use. Since the 1980s, the CPSC has addressed ATV safety through various activities, including rulemaking, recalls, consumer education, media outreach, and litigation. These efforts focused on stability and handling issues related to ATV overturn and collisions. Figure 1 shows an example of an ATV.



Figure 1: Example of an ATV

Currently, CPSC regulates ATVs through the incorporation by reference of ANSI/SVIA 1-2017 *Four-Wheel All-Terrain Vehicles – Equipment, Configuration, and Performance Requirements* as a mandatory standard (16 CFR 1420.3(a)).

#### 2. Recreational Off-Highway Vehicles

An ROV is a motorized vehicle having four or more low-pressure tires designed for off-highway use and intended by the manufacturer primarily for recreational use by one or more persons. Other characteristics of an ROV include: a steering wheel for steering control, foot controls for throttle and braking, bench or bucket seats, rollover protective structure (ROPS), restraint system, and a maximum speed greater than 30 miles per hour (mph). ROVs are intended to be used on terrain similar to ATVs. ROVs are distinguished from ATVs by the presence of a steering wheel, instead of a handle bar for steering; bench or bucket seats for the driver and passenger(s), instead of straddle seating; foot controls for throttle and braking, instead of levers located on the handle bar; and ROPS and restraint systems that are not present on ATVs. CPSC staff has worked on stability, handling, and occupant protection issues related to ROVs since 2009.<sup>2</sup> Figure 2 shows an example of an ROV.



Figure 2: Example of an ROV

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<sup>2</sup> The NPR for ROVs is available at: 79 Fed. Reg. 68964 (Nov. 19, 2014); the accompanying briefing package is available at: [https://cpsc.gov/s3fs-public/pdfs/foia\\_SafetyStandardforRecreationalOff-HighwayVehicles-ProposedRule.pdf](https://cpsc.gov/s3fs-public/pdfs/foia_SafetyStandardforRecreationalOff-HighwayVehicles-ProposedRule.pdf).

### 3. Utility Terrain Vehicles or Utility Task Vehicles

For this rulemaking, a UTV is a motorized vehicle having four or more low-pressure tires designed for off-highway use with the same characteristics as ROVs (bench seating, steering wheel, foot controls, ROPS, and seat belts). However, UTVs are intended for utility use, have larger cargo beds to accommodate hauling-type tasks, and they generally have maximum speeds between 25 and 30 mph. Figure 3 shows an example of a UTV.



Figure 3: Example of a UTV

## D. The Market

### 1. Market Size

ATV sales have varied over the last 15 years. U.S. ATV sales peaked in 2004, at an estimated 812,000 units. Since 2004, ATV sales have declined steadily. The Commission estimates approximately 205,000 ATVs were sold in the United States in 2018: 177,000 adult models and 77,000 youth models, with sales revenue of approximately \$1.35 billion. The Commission identified 13 manufacturers supplying

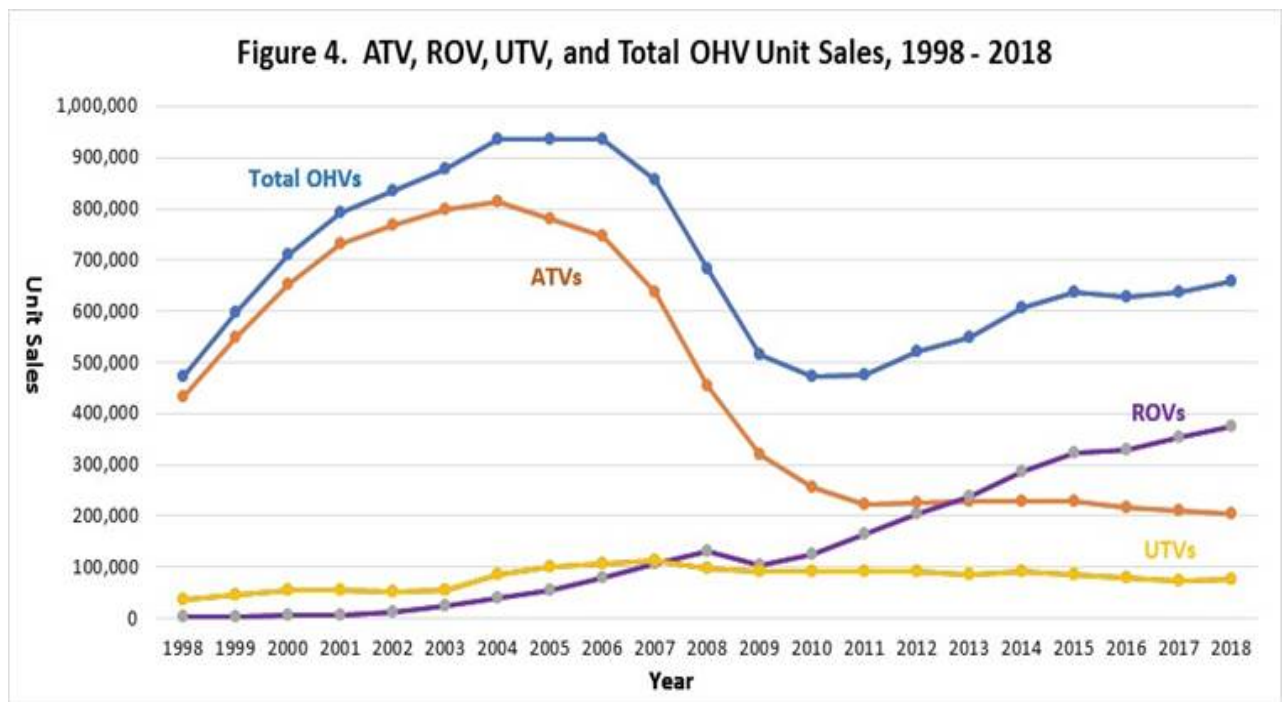


ATVs to the U.S. market in 2018, six from the United States, five from Taiwan, and one each from Japan and Mexico. Nine manufacturers were responsible for all ATVs distributed into the U.S. market in 2018; four U.S. manufacturers distributed ATVs manufactured by Taiwanese firms, in addition to their own. U.S. manufacturers accounted for approximately 63 percent of 2018 U.S. ATV sales; all ATVs were manufactured and/or distributed by current members of the Specialty Vehicle Institute of America (SVIA).

Except for 2009, annual U.S. ROV sales have increased steadily, from an estimated 2,700 units in 1998, to an estimated 376,000 units in 2018. The Commission estimates 2018 U.S. ROV sales revenue at approximately \$5.85 billion. The Commission identified 35 manufacturers known to have supplied ROVs to the U.S. market in 2018, 20 from China (including Taiwan); 13 from the United States, and 1 each from Mexico and South Korea. The Commission identified 53 distributors/brands. CPSC staff estimates U.S. manufacturers accounted for approximately 79 percent of 2018 U.S. ROV sales, and estimates approximately 90 percent of ROVs sold in the United States in 2018 were manufactured by current members of the Recreational Off-highway Vehicle Association (ROHVA) or the Outdoor Power Equipment Institute (OPEI).

U.S. UTV sales peaked in 2007, at an estimated 112,000 units, before gradually declining. Approximately 76,000 UTVs were sold in the United States in 2018, with sales revenue of approximately \$700 million. The Commission identified 22 manufacturers known to have supplied UTVs to the U.S. market in 2018, 14 from the United States, 6 from China (including Taiwan), and 1 each from Canada and South Korea; and 27 distributors/brands were identified. The Commission estimates U.S. manufacturers accounted for approximately 92 percent of 2018 U.S. UTV sales. Current ROHVA and OPEI members accounted for approximately 90 percent of U.S. 2018 UTV sales.

Total U.S. OHV unit sales peaked in 2004, at approximately 937,000. OHV sales then declined, to approximately 475,000 by 2011, before beginning a partial recovery. Figure 4 illustrates ATV, ROV, UTV, and total OHV unit sales from 1998 through 2018. The Commission identified as many as 52 manufacturers and 68 distributors/brands of OHVs supplying an estimated 657,000 OHVs to the U.S. market in 2018, with sales revenue exceeding \$7.87 billion. The Commission estimates U.S. manufacturers accounted for approximately 75 percent of 2018 U.S. OHV sales; SVIA, ROHVA, and OPEI members accounted for approximately 93 percent of 2018 U.S. OHV sales.



## 2. Retail Prices

The Commission identified 115 different ATV model variants and configurations in two product segments sold in the United States in 2018: youth and adult. Youth ATV manufacturer suggested retail prices (MSRPs) ranged from a minimum of \$1,999, to a maximum of \$3,799, with an average of approximately \$2,650. Adult ATV model MSRPs ranged from a minimum of \$3,799, to a maximum of \$15,349, with a mean of

approximately \$7,400. The mean MSRP for all U.S. ATV sales in 2018 was approximately \$6,750.<sup>3</sup>

As with ATVs, there is significant variation in ROV design, weight, engine displacement, and other characteristics and accessories. The Commission identified 396 different ROV model variants and configurations that were sold in the United States in 2018. ROV MSRPs ranged from a minimum of \$3,299, to a maximum of \$53,700, with an average of approximately \$15,400.

The Commission identified 138 different UTV model variants and configurations that were sold in the United States in 2018. UTV MSRPs ranged from a minimum of \$3,499 to a maximum of \$49,900, with an average of approximately \$12,000.

### *3. Number of Off-Highway Vehicles in Use*

The Commission is unable to provide an accurate estimate of the number of OHVs currently in use, due to a lack of reliable estimates of ATV, ROV, and UTV product life. Table 1 illustrates a range of estimates possible under different assumptions of product life. In each case, the estimate is constructed using a gamma distribution, a common distribution for estimating failure rates, with shape = 5 and  $\beta = 1$ , applied to 1998–2018 OHV sales data. Table 1 provides estimates for ATVs, ROVs, UTVs, and total OHVs under three product-life assumptions (10, 15, and 20 years).<sup>4</sup>

<b>Table 1. Estimates of OHVs in Use</b> (Gamma Distribution w/ Shape = 5 and beta = 1)			
<b>Life Expectancy</b>	<b>10 Years</b>	<b>15 Years</b>	<b>20 Years</b>
<b>ATV</b>	3,217,376	5,782,667	7,467,359
<b>ROV</b>	2,419,854	2,725,373	2,853,372
<b>UTV</b>	895,474	1,226,299	1,417,666
<b>TOTAL</b>	6,532,704	9,734,340	11,738,397

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<sup>3</sup> Unless otherwise noted, OHV product and market information is based upon CPSC staff analysis of 1998–2018 sales data provided by Power Products Marketing, Minneapolis, MN.

<sup>4</sup> Implied in the total OHV estimates is the assumption that ATVs, ROVs, and UTVs have the same expected product life. This assumption likely does not hold, because product life is dependent upon annual mileage, terrain driven upon, and other usage characteristics, which are not homogenous across OHV categories.

#### *4. Small Businesses Subject to Rulemaking*

OHV manufacturers might be classified in the North American Industrial Classification System (NAICS) category 336999 (All Other Transportation Equipment Manufacturing), or possibly, 336112 (Light Truck and Utility Vehicle Manufacturing), 333111 (Farm Machinery and Equipment), 333112 (Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing), and 333120 (Construction Machinery Manufacturing). According to size standards established by the U.S. Small Business Administration (SBA) for these NAICS, firms with fewer than 1,000, 1,500, 1,250, 1,500, and 1,250 employees, respectively, are considered to be small firms. OHV distributors may be classified in NAICS categories 423110 (Automobile and Other Motor Vehicle Merchant Wholesalers) or 441228 (Motorcycle, ATV, and All Other Motor Vehicle Dealers). The SBA size standard for these NAICS classifications is 500 employees. The Commission identified eight U.S. OHV manufacturers that meet these SBA size standards, nine that do not, and four for which a determination could not be made. CPSC staff also identified 27 OHV distributors that meet these SBA size standards, 24 that do not, and 17 for which a determination could not be made.

#### **E. Risk of Injury**

##### *1. Incident Data*

CPSC staff conducted a review of incidents, injuries, and fatalities associated with OHV fire and debris-penetration hazards. The reported incidents from CPSC's Consumer Product Safety Risk Management System (CPSRMS) are from January 1, 2003 through December 31, 2020; the National Electronic Injury Surveillance System (NEISS) –based injury estimates are from January 1, 2007 to December 31, 2019.

Fire and debris-penetration hazards are generally unrelated to one another. Out of the 4,792 incidents staff identified as related to debris-penetration or fire hazards, only two exhibited *both* debris-penetration and fire-related hazards. Table 2 shows the breakout of hazards by data sources and severity of incidents.

**Table 2: Incident Records Relevant to Debris-Penetration and/or Fire Hazards as Presented in this Report**

Relevant Hazards	Total Records Reviewed	CPSRMS (2003-2020)			NEISS (2007-2019)
		Fatal Reported Incidents	Injury Reported Incidents	No Injury Reported Incidents	Injury Cases in Sample
Debris Penetration	107	6	18	81	2
Fire Hazard (fire, thermal, leaks)	4,683	28	264	4,109	282
Both hazard of Debris-Penetration and Thermal, Fuel, or Fire-Related Hazards	2	0	1	1	0
<b>Total</b>	<b>4,792</b>	<b>34</b>	<b>283</b>	<b>4,191</b>	<b>284</b>

Sources: CPSRMS and NEISS.

a) Fire Hazard Incidents

CPSC staff's assessment of the fire hazard incidents excludes fires ignited by external sources (*e.g.*, overtaken by a controlled burn or bonfire, even if the OHV ignites) refueling incidents, and incidents in which it is ambiguous about whether the source of the fire may have come from a source outside the OHV. The analysis of reported incidents in CPSRMS with incident dates from 2003 through 2020 is detailed below.

*CPSRMS Incident Data (2003–2020)*

CPSC staff categorized reports in CPSRMS with incident dates from 2003 through 2020 into one of several mutually exclusive categories.

Sometimes OHV fires occur after a crash, and because these events may involve multiple complicating factors, they are set aside in their own category. It is very plausible that in some of these instances, occupants may still have been injured or killed

from the crash, even if the vehicle had not ignited. For instances of a fire igniting before or without a crash, it is generally clearer to attribute resulting injuries or deaths specifically to the fire. In many other instances, there may be thermal events that do not involve actual ignition of fire; but such events can still be harmful or hazardous. Leaks or spraying of oil or fuel do not necessarily constitute a thermal event, because these flammable liquids not only have the potential to ignite and release thermal energy; but even without ignitions, such leaks can present a hazard.

Table 3 presents the fire hazard subtypes by the severity of the outcome as seen in the CPSRMS incident data.

**Table 3: Reported Incidents by Fire Hazard Subtype and Severity; 2003-2020**

Type of Fire, Thermal, or Leak Hazard	Reported Incidents	Reported Incident Severity		
		Fatal	Injury	No Injury
Post-Crash Fire Ignition	51	28	18	5
Fire Ignited (without/prior to crash)	1,626	0	129	1,497
Thermal Event or burn (without Fire Ignition)	2,451	0	105	2,346
Leak or spray of oil or fuel (without other burn, thermal event, or fire)	273	0	12	261
<b>Total</b>	<b>4,401</b>	<b>28</b>	<b>264</b>	<b>4,109</b>

Source: CPSRMS

#### NEISS-Based National Injury Estimates (2007–2019)

There are an estimated 14,200 (sample size = 282) emergency department-treated injuries from 2007 to 2019, associated with OHV fire, thermal, and burn hazards *without* indication of a crash or related event. “Crash-type events” are defined in this review to include vehicle wrecks, rollovers, entrapments, traffic collisions, and victims falling or jumping from the vehicle, for example.

Although crash-type events coinciding with burns and other thermal-, fuel- and fire-related hazards are of concern, such cases were already considered and discussed among the reported incidents. For the assessment of NEISS injury cases, they are excluded to focus on injuries more directly attributable to heat and thermal events. This narrowing of scope is not intended to suggest that overheating or other malfunctioning of the OHV

occurred, or even that other additional factors were not involved, but simply to indicate that a burn, or other thermal-related event occurred without a crash-type event.

Staff is unable to present the annual estimates of the injuries over the period from 2007 through 2019, because estimates for many of the individual years fall below the NEISS publication criteria.<sup>5</sup> However, staff did not see any increasing or decreasing trend in the data.

The 14,200 estimated thermal-, fuel-, and fire-related injuries are based on a sample size of 282 cases. The vast majority of these estimated injuries indicate burns (as the primary diagnosis), without necessarily involving the ignition of any fire or flame. Of the injuries involving burns, around 12,800 injuries (about 91 percent) were classified as thermal burns, while the remainder consisted of scald burns, chemical burns, or burns that were not specified. None of the incidents reviewed involved any fatalities. Only around 3 percent of estimated injuries mentioned any sort of fire ignition. Less than 2 percent of estimated injuries did not mention burns, but instead involved exploding projectiles lacerating or penetrating the body, or a gasoline explosion.

Most of the injuries were suffered in the lower body, with an estimated 5,900 (42%) of injuries affecting the lower leg in particular. About 1,800 (13%) of the injuries affected the ankle, foot, or toe, and about 1,500 (11%) involved the knee, upper leg and/or lower trunk. Many of these injuries suffered at the leg and neighboring body parts were described as involving burns from the muffler, exhaust pipe, and/or hot exhaust. It was not always clear whether the burns were suffered due to direct contact or proximity. An estimated 3,200 (23%) of the injuries involved hands and fingers. Injuries between the shoulders and wrists (including arms and elbows) were attributed to an estimated 1,300 (9%) of the injuries. Several reported injuries also occurred on or near the eyes and

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<sup>5</sup>According to the NEISS publication criteria, an estimate must be 1,200 or greater, the sample size must be 20 or greater, and the coefficient of variation must be 33 percent or smaller.

face, but the sample size is too small to project an estimate specific to that region of the body. Table 4 presents the estimated injuries by body parts grouped as described above.

**Table 4: U.S. Emergency Room-Treated Injuries Related to Fire/Thermal/Fuel Hazards without Indication of Crash-Type Events by Body Parts; 2007-2019**

Body Part	Body Parts Group Estimate	Percentage of Estimated Injuries for Body Part Group
Leg, lower***	5,900	42%
Ankle***	1,800	13%
Foot		
Toe		
Trunk, lower		
Leg, upper	1,500	11%
Knee	3,200	23%
Hand		
Finger		
Shoulder	1,300	9%
Arm, upper		
Elbow		
Arm, lower		
Wrist		
Eyeball	**	**
Face*		
<b>Total</b>	<b>14,200</b>	<b>100%</b>

Source: NEISS

\*"Face" includes eyelid, eye area, nose, and forehead.

\*\*Sample size is too small to report estimate specific to this group of body parts.

\*\*\*Almost all injuries in this dataset are classified under a single primary (e.g., most severely injured) body part. Only one injury is counted only as a lower leg injury (and not as an ankle injury) which also involved a burn at the lower leg in combination with a "popped" ankle when the vehicle "blew out."

An overwhelming majority of the emergency room patients (94%, or an estimated 13,500) were treated and released, or released without treatment. The remainder were treated and admitted for hospitalization, held for observation, or left without treatment or being seen.

Although the majority of these injuries appear to have involved burns due simply to proximity or contact with heat sources, some other relevant hazards are observed among the NEISS cases. There were several incidents relating to fuel or gasoline, battery or some form of "explosion"; and as previously mentioned, there were a few incidents in which ignition or fire was mentioned. Staff does not have data about which burn cases resulted from overheating, as compared to components operating at normal hot



temperatures. However, given that many of the injuries involving the hand and fingers appear to have involved contact with components that are expected to be heated at normal operational conditions, staff infers that many of the hand burns likely occurred without the OHV overheating, or otherwise functioning outside of normal design parameters.

#### b) Debris-Penetration Incidents

Debris penetration involves debris (usually a tree branch or stick) penetrating an OHV (usually the floorboard of underside of an ROV or UTV). When such penetration occurs, there is a potential hazard of the branch or other debris to penetrate not only the floor or body of the OHV, but also occupants of the OHV. None of the incidents staff identified were found to involve ATV debris-penetration incidents. Given that ATVs lack floorboards, this result was not unexpected; but staff did search OHV incidents for this hazard, regardless of whether it was indicated to involve an ATV, ROV, UTV, or unknown type of OHV.

In the NEISS data, staff identified only two cases with sufficient descriptive information to conclude that the injuries were specifically associated with a debris-penetration hazard. Due to this small sample size, staff cannot report any estimate of injuries. Instead, for the debris-penetration-hazard scenario, staff counted the two injuries from NEISS with the other reported injuries from CPSRMS.

For the six fatal incidents, two involved a passenger's death, while the other four involved the driver's death. Four involved a tree branch, one a large stick, and the other a 2-inch to 3-inch piece of wood. At least three involved penetration of the chest.

The list below paraphrases text written by the respective CPSC investigators for each of the six fatal incidents:

- tree limb penetrated the floor board and struck passenger in chest (driven in water);

- tire over tree limb that pierces fender, nylon mesh door, and left side of driver (driven in woods);
- passed over a large stick that was sticking up in the ground, which passed through brake pedal arm through bottom edge of seat and into lower abdomen of driver (driven in power line clearing);
- impaled by a 2- to 3-inch-size piece of wood in upper right thigh, causing exsanguination of driver (driven on heavily forested public land);
- branch penetrated UTV bottom and struck passenger in chest (driven along trail);
- ran over large tree branch that struck driver in chest (driven in mountains).

Table 2 presents the severity of the 20 nonfatal injury incidents from debris penetration.

**Table 5: Debris Penetration by Injury Severity: 2003-2020**

<b>Injury Severity</b>	<b>Incidents</b>
Hospital Admission	4
Emergency Department Treatment Received	3
First Aid Received by Non-Medical Professional	1
No First Aid or Medical Attention Received	2
Level of care not known	10
<b>Total Injury Incidents</b>	<b>20</b>

Sources: CP SRMS and NEISS.

## *2. Hazard Patterns and Analysis of In-Depth Investigations*

### *a) Fire Hazard Review and Assessment*

Since 2018, CPSC staff has collaborated with the three standards development organizations (SDOs): ROHVA, OPEI, and SVIA, to examine fire hazard causations of OHV-related incidents investigated by CPSC staff and reported as in-depth investigations (IDIs). All three vehicle types, ROVs, UTVs, and ATVs, were associated with fire hazards. Staff provided the SDOs with 121 redacted IDIs related to fire hazards in OHVs for review and analysis. These 121 redacted IDIs are a subset of the more comprehensive list of IDI data analyzed by the CPSC Epidemiology staff and detailed in section E.1 of this preamble. Of the 121 redacted IDIs, CPSC staff and the SDOs concluded that 84

IDIs contained sufficient information to determine cause of fire origin, and they agreed to categorize these IDIs. This discussion provides staff's insight into this subset of 121 incidents discussed by and the SDOs. When cause or categorization of incidents are discussed here, we discuss only the 84 incidents for which CPSC staff and SDOs agreed there was sufficient information for categorization. Fuel leaks are considered fire hazards because ignition of flammable fluids contributes to the severity of an incident. The fire and fuel leak origins identified in the 84 IDIs include a breach in the fuel system, electrical component failure, exhaust overheating, and debris (grass/dry vegetation) ignition.

The majority (44 of the 84) of the causations involved fuel system components (29) and exhaust overheating (15). The others involved specific electronic components (voltage regulator, wiring harness, electronic control module, or battery), debris (grass or dry vegetation) ignition from contacting exhaust heat, oil leaks, and unknown causes. Those that were deemed unknown involved either two or more possible combined causations or instances where causations could not be determined due to insufficient information from particular IDIs. Twenty-seven of the 121 IDIs involved burn injuries when consumers contacted hot surfaces or suffered burns from open flames. Neither CPSC staff, nor the SDOs, identified any fires due to the lack of a spark arrester.

Of the 37 IDIs that had unknown fire causations, 20 involved total-OHV losses. A total loss fire refers to an OHV that has been completely consumed by the fire, leaving only a metal frame and other non-combustible metal parts. A total loss can occur when a smaller fire spreads into a fuel-fed fire, so that the entire vehicle becomes engulfed in flames. This often makes it difficult to determine the origin of the fire. The smaller fire can originate from various sources, such as an overheating exhaust that burns a plastic body panel, a fuel leak fire, or a fire from an electrical short, where a portion of a plastic body panel may catch fire, then that fire can spread to the entire vehicle because the

majority of the OHV body panels are generally made of flammable plastics. Total loss incidents, as shown in Figure 5, represent the most severe fire hazard of an OHV.



Figure 5: ROV Prior to the Fire Incident (Left), ROV on Fire (Middle), and ROV Post-Total Loss Fire (Right)

Each OHV is equipped with subsystems that have combustible or flammable sources that can lead to fires and/or fire hazards (*i.e.*, fuel leaks). These subsystems are the fuel system (fuel tank, fuel pump, fuel rail, fuel filter, hoses, shutoff valves, and fuel caps), electrical system (voltage regulator, wire harnesses, battery, fuse boxes, and alternator), and the exhaust system (exhaust piping, catalytic converter, muffler, and all surrounding componentry).

With respect to the fuel system, a breach in the fuel system can cause a fuel leak and pose a risk of fire. A breach can be a crack/hole in the fuel tank, damaged fuel hose, crack/hole in a fuel filter, or unsecured fuel connection to a fuel rail. For example, in one IDI involving an ATV, a passenger received second- and third-degree burns to the right wrist and right leg when the ATV burst into flames from an overheated gasoline line that melted and spilled fuel onto the hot engine.

Other fuel-related fire hazards can be due to over-pressurization of the fuel system and inadequate ventilation. Inadequate ventilation and over-pressurization of the fuel system can result in boiling gasoline, which can expel abruptly when opening the fuel cap, potentially splashing hot gasoline onto consumers. Figure 6 shows an example from an IDI of an over-pressurization scenario with an ROV. Unbeknownst to the consumer, opening the fuel cap released pressurized gasoline and a brief fire resulted. Black soot can be seen surrounding the fuel cap.



Figure 6 – Soot on the Frame of the ROV (Red Arrows) Resulted from Flames that Shot Out from the Fuel Tank When the Consumer Opened the Gas Cap

An electrical failure, such as an electrical short or an electronic component overheating, can lead to fires. Figure 7 illustrates a fire that started due to an overheated electronic control module (ECM), which ignited the ECM and wiring.

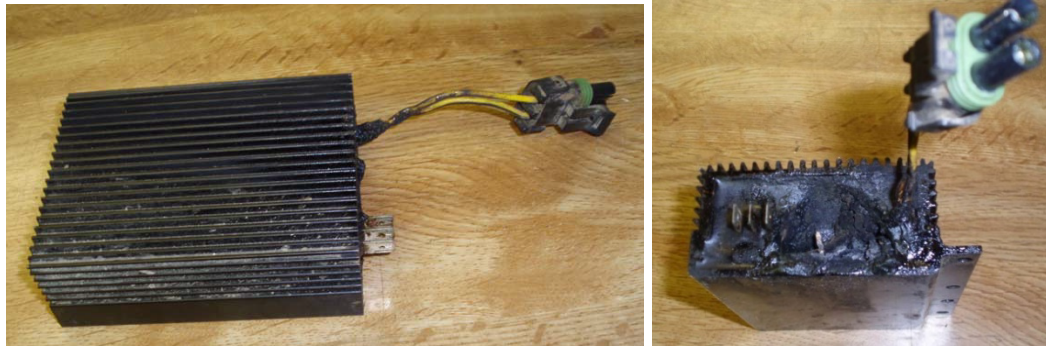


Figure 7 – Example of Burned ATV ECM; Left Photo – Top View, Right Photo – Side View

Excessive exhaust heat near flammable plastics can cause melting and subsequently fires, if the exhaust systems do not manage the exhaust heat sufficiently, via heat shielding and/or adequate ventilation. It is not uncommon for modern ROV exhaust surface temperatures to exceed 800°F. Insufficient heat shielding between the exhaust pipes and plastic paneling can cause the plastic to melt. Figure 8 illustrates a fire that ignited when melted plastic paneling dripped onto the exhaust pipe and burned a hole through the panel.

Of the 121 IDIs examined, 27 IDIs involved burned victims. Of these 27 IDIs, 10 specified first-, second-, and/or third-degree burn injuries. The other 17 IDIs did not specify the severity of the burn injuries. These burn injuries occurred when victims had direct contact with a hot surface or when an open flame burned the victims.





Figure 8 – Example of Fire Damage Caused by Excessive Exhaust Heat

b) Debris-Penetration Hazard Review and Assessment

Debris-penetration hazards are unique to ROVs and UTVs because the wheel-well areas on these vehicles are generally larger and more open, compared to ATVs. The larger space exposes more floorboard and wheel-well surface to branches that can and do penetrate into the occupant compartment. Debris penetration through the floorboard or wheel well can impale the occupants of the vehicle and has caused severe injuries and deaths. An example of debris penetration is shown in Figure 9. CPSC staff did not find any ATV-related debris-penetration incidents in the injury/death data searches or debris-penetration recalls.



Figure 9: Example of Tree Branch (Yellow Arrows) Penetrating ROV floorboard; Left Photograph Shows View from the Cabin (Passenger Seat); Right Photograph Shows Front View of ROV

CPSC staff shared eight redacted IDIs involving debris penetration, which is a subset of the more comprehensive list of IDI data analyzed by the CPSC Epidemiology staff, with the SDOs for review and analysis. CPSC staff's review revealed four IDIs involved fatal impalement of the occupant. A summary of the IDI data shown in Table 6 suggests the debris penetrations occurred at relatively low speeds, *i.e.*, 25 mph or less.

Table 6 – Summaries of Eight Debris-Penetration IDIs

Vehicle	Injury Type	Estimated speed, mph	Injured Body part(s)	Description
A	Death	25	heart	Consumer drove into a creek when water splashed onto the windshield; tree limb broke through the floor and struck passenger who died as a result of the impalement
B*	No Injury	5	none	Consumer was driving on a slight hill; rocks punctured the floorboard
C	Death	10	viscera	Consumer drove on a wooded trail (dirt road) with various debris (rocks and limbs); tree limb pierced fender and nylon mesh door and impaled the driver
D**	Death	Not available	no information	Not available
E	Contusion/ No Medical Attention	20	abdomen	Consumer drove in the dark (12:30am) on a leaf covered trail; tree branch punctured driver's side floor, struck his abdomen, but did not impale the driver due to the driver wearing thick clothing.
F	Abrasions	25	ankle	IDI involved 2 occasions – on one occasion snow was on ground, could not see branches thus a debris penetration occurred; other occasion ROV traveled on paved road and a tree branch punctured rear passenger floor
G	Death	Not available	thigh	Not available
H	Abdomen impaled	25	Liver, stomach, spleen, pancreas	Consumer drove on dirt/gravel road lined with 3-foot-tall grass on both sides; when attempting to avoid debris from a downed tree, a branch penetrated passenger side floor, struck passenger and impaled the driver.
*All vehicles are ROVs, except vehicle B, which is a UTV. Vehicle B involved rocks penetrating the floorboard; all other vehicles involved tree branches penetrating the floorboards. **It is unknown whether vehicle D is an ROV or UTV due to the lack of model information.				

There were four deaths and three injuries associated with debris penetration. Many of these incidents occurred when there was reduced visibility or the driver was unable to see the debris (*e.g.*, driving in the dark, snow-covered terrain), but overall the incidents occurred during what staff considers reasonably foreseeable, normal use of the vehicles.

### 3. OHV Recalls

From 2002 to 2019, there were 68 OHV fire and debris-penetration hazard recalls. The fire hazard recalls involved ATVs, ROVs, and UTVs. The debris-penetration recalls involved ROVs.

CPSC recall data include the number of affected vehicles, number of incidents, and injuries associated with the recalls. An incident is considered a penetration through the floorboard, an actual fire, a fuel leak, or other thermal event (*e.g.*, melted plastic, overheated component).



There have been 26 ATV fire hazard recalls, of which 18 involved fuel system components; 4 involved electronic control modules; 2 involved oil leaks; 1 involved brake fires due to friction; and 1 involved inadequate heat shielding. Collectively, there were 462,372 recalled vehicles, 3,325 incidents, 83 fires, and 24 injuries associated with 26 recalls from 2002 to 2018. There were no deaths associated with ATV fire hazard recalls.

With respect to ROVs, there were 33 ROV fire hazard recalls, of which 9 involved fuel system components; 3 involved electrical wiring/electrical components; 10 involved exhaust heat-inadequate heat shielding; 3 involved grass/dry vegetation debris ignition; 5 involved oil leaks; 1 involved improper throttle body installation; and 2 involved multiple sources (engine misfire, brake fires). Collectively, there were 709,886 recalled vehicles, 1,022 incidents, 327 fires, and 32 injuries associated with 33 recalls from 2008 to 2019. There was one death associated with one fire hazard recall.

There were 6 UTV fire hazard recalls; 1 involved grass/dry vegetation debris ignition; and 5 involved fuel system components. Collectively, there were 43,340 recalled vehicles, 144 incidents, and 11 fires associated with 6 recalls from 2008 to 2017. There were no injuries or deaths associated with UTV fire hazard recalls.

There were 3 ROV debris penetration hazard recalls. Collectively, there were 44,500 recalled vehicles, 630 incidents, and 9 injuries associated with three recalls from 2014 to 2016. There were no deaths associated with ROV debris penetration hazard recalls.

## **F. Existing Standards**

### *1. ATVs*

SVIA developed the voluntary standard for ATVs, ANSI/SVIA 1 *Four-Wheel All-Terrain Vehicles – Equipment, Configuration, and Performance Requirements standard*. SVIA published ANSI/SVIA 1 in 1990, and revised the standard in 2001, 2007,

2010, and 2017. In 2008, the Consumer Product Safety Improvement Act (CPSIA) required the Commission to make mandatory the voluntary standard for ATVs, ANSI/SVIA 1-2007. The Commission adopted the voluntary standard as a mandatory standard; the standard is codified in 16 CFR part 1420. The Commission amended 16 CFR part 1420 in 2011 and 2018, to reference the latest revision of ANSI/SVIA 1-2010 and ANSI/SVIA 1-2017, respectively.

The requirements ANSI/SVIA 1-2017 include warning label requirements, various mechanical requirements, such as static stability, braking distances, maximum speeds for the various age group ATVs, and various component construction requirements such as those for handlebars, foot rests, suspension, and most recently, lights.

## 2. *ROVs*

The Recreational Off-Highway Vehicle Association (ROHVA) developed ANSI/ROHVA 1 *American National Standard for Recreational Off-Highway Vehicles* for recreation-oriented ROVs. The Outdoor Power Equipment Institute (OPEI) developed ANSI/OPEI B71.9 *American National Standard for Multipurpose Off-Highway Utility Vehicles* for utility-oriented vehicles; ANSI/OPEI B71.9 includes requirements for vehicles that exceed 30 mph (and thus meet CPSC's definition of "ROVs").

The ROV requirements in ANSI/ROHVA 1-2016 and ANSI/OPEI B71.9-2016 include static and dynamic stability, vehicle handling, ROPS, speed limiter function when seat belts are not fastened, and various component construction requirements such as for steering, brakes, and seat belts.

## 3. *UTVs*

OPEI developed ANSI/OPEI B71.9 American National Standard for utility-oriented vehicles; ANSI/OPEI B71.9 includes requirements for vehicles that exceed 30

mph (and thus meet CPSC definition of “ROVs”). For this rulemaking, the Commission defines “UTVs” to have maximum speeds below 30 mph. The UTV requirements in ANSI/OPEI B71.9-2016 for vehicles with maximum speed below 30 mph include minimum static stability, rollover protection structure (ROPS), brake configuration and performance, and lighting.

All three of these standards reference the U.S. Forest Service standard, USDA-FS 5100-1, which requires OHVs to be equipped with spark arrestors. A spark arrestor is a metal screen installed in the exhaust tail pipe to mitigate sparks exiting the tail pipe to reduce the risk of forest fires. This requirement does not address other sources of fire hazards to riders and passengers of OHVs; and thus, the Commission views this requirement as ineffective to address OHV fire hazards to consumers.

In addition, the ANSI/OPEI B71.9 – 2016 standard has a general requirement that “all fuel system components shall be located, routed, and contained in such a manner as to provide clearance to heat-generating components and to avoid damage from obstacles or projections that may be encountered during normal operation.” This requirement lacks specificity, and thus, the Commission views this requirement as ineffective.

The Commission does not believe the two preceding requirements adequately address the fire hazards associated with OHVs. The incident data and recall data suggest OHV fires due to fire sources, such as electrical shorts, exhaust overheat, and fuel leaks cannot be addressed by the spark arrestor requirement or the general ANSI/OPEI B71.9 – 2016 statement regarding fuel system component location. None of the aforementioned standards contain requirements to mitigate the debris penetration hazard. Thus, the Commission believes additional requirements are needed to address OHV fire and debris penetration hazards.

CPSC staff met with representatives of the three SDOs, ROHVA, SVIA, and OPEI on multiple occasions to discuss recall data, categorizing IDIs fire causations, and

possible requirements for fuel system, electrical, and exhaust system requirements to reduce the risk of fire hazards. After discussing and categorizing fire causations of IDIs, CPSC staff and SDOs initiated discussions of possible fire preventative standards requirements starting with the fuel system component examination. However, to date, there have been no proposed fire and debris-penetration requirements to update the current ANSI/ROHVA 1-2016, ANSI/SVIA 1-2017, and ANSI/OPEI B71.9-2016 standards to address fire and debris penetration hazards. Thus, the Commission concludes that the current OHV standards will not adequately address the deaths and injuries associated with OHV fire and debris-penetration hazards.

### **G. Regulatory Alternatives**

The Commission could proceed with rulemaking under the CPSA establishing performance requirements and/or warnings and instructions for OHVs to address the risks of injury associated with OHV fire and debris-penetration hazards. Alternatively, the Commission could continue to address the hazards through the voluntary standards, and continue to work to develop more effective voluntary standard requirements to address the identified hazards, instead of issuing a mandatory rule. However, as previously discussed, the Commission preliminarily believes that the existing standards do not adequately address the risk of injury associated with fire and debris-penetration hazards in OHVs. The Commission has recalled OHVs for fire and debris penetration hazards. The fire hazard recalls involved ATVs, ROVs, and UTVs. The debris-penetration recalls involved ROVs. The Commission could continue to conduct recalls, both voluntary and mandatory, instead of promulgating a mandatory rule. However, recalls are not likely to be as effective at reducing the risk of injury as a mandatory standard. Recalls only apply to an individual manufacturer and product and do not extend to similar products. Product recalls occur only after consumers have purchased and used such products and have been exposed to the hazard to be remedied by the recall. Additionally, recalls can only address

products that are already on the market, and cannot prevent unsafe products from entering the market. Finally, the Commission could issue news releases warning consumers about the fire and debris-penetration hazards association with OHVs. As with recalls, this alternative is not likely to be as effective at reducing the risk of injury as a mandatory standard.

## **H. Request for Information and Comments**

This ANPR is the first step in a proceeding that could result in a mandatory safety standard(s) to address fire and debris-penetration hazards associated with OHVs. The Commission requests comments on all aspects of this ANPR, but specifically requests comments regarding:

1. The risk of injury identified by the Commission, the regulatory alternatives being considered, and other possible alternatives for addressing the risk;
2. Any existing standard or portion of a standard that could be issued as a proposed regulation;
3. A statement of intention to modify or develop a voluntary standard to address the risk of injury discussed in this notice, along with a description of a plan (including a schedule) to do so;
4. Studies, tests, or surveys performed to analyze fire and/or debris penetration hazard injuries, including severity and costs associated with injury;
5. Studies, tests, or descriptions of technologies or design changes that address OHV fire and/or debris penetration hazard, and estimates of costs associated with incorporation of the technologies and their impact on wholesale or retail prices;
6. Information on ATV, ROV, and UTV expected lifespans and/or the number of ATVs, ROVs, and UTVs in use;
7. Information on the number of hours driven, miles driven, and/or other exposure metrics for OHVs;

8. Studies, test, or surveys performed to analyze use of aftermarket products that address OHV fire and/or debris-penetration hazards, and their effectiveness at reducing OHV fire and/or debris-penetration hazard injuries, and means by which their use by consumers could be increased;
9. Information on the expected impact of technologies or design changes that address OHV fire and/or debris-penetration hazard injuries on manufacturing costs or wholesale prices;
10. Information on the potential impact of technologies or design changes to address OHV fire and/or debris-penetration hazards on consumer utility.

Comments and other submissions should be identified by identified by Docket No. CPSC-2021-0014 and submitted in accordance with the instructions provided above. All comments and other submissions must be received by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

**Alberta A. Mills,**  
*Secretary,*  
*U.S. Consumer Product Safety Commission.*

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